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MEMORANDUM FOR: Distribution List (SAFE DOC Plan)

STAT FROM: [redacted]
Chief, Quality Assurance Segment (QAS)
Consolidated SAFE Project Office (CSPO)

Forwarded at the enclosure are changes to the SAFE Documentation Plan. Please note that this is Change 01 to the previously noted revisions. The revision sheet itself is a replacement page. The two changes noted herein represent an addition to the outline for the SAFE CPCI (B-5) Specification (Appendix I) and an overall revision of the outline for the SAFE Data Specification Document (Appendix R). The SAFE Documentation Plan is considered administrative in nature and therefore not subject to the rigors of the SAFE Configuration Management (CM) change process. Changes will be routinely reviewed and approved by CSPO staff and forwarded to respective addresses.

STAT [redacted]

27 October 1983

TO: Distribution•

FROM: CSPO /Quality Assurance Segment

SUBJECT: Change Pages to the Documentation Plan

The attached pages are approved changes to Appendix I and R of the Documentation Plan. Remove pages I-1 through I-4 and insert I-1 through I-5. Remove pages R-1 through R-4 and insert R-1 through R-5. Remove the second Revision Status Sheet and replace with the attached Revision Status Sheet.

STAT

Doc No SF-U-CA-G-002A
Chg Date 1 Sept 1983
Chg No 01
Superseded Date 8 July 1983

REVISION STATUS SHEET

Rev No.	Date	Affected Pages	Auth/Reason
A (Con't)	14 June 1983	O-5, Paragraph 15.0 reworded R-1, Paragraph 2.1-2.N added V-1, Part 1. reworded W-1, through W-6, Appendix W added.	Clarification Correction Correction New material
A	8 July 1983	Appendix M, Pages and Paragraphs renumbered Entire Document. Numerous additions, deletions and changes of an editorial nature (see previous Documentation Plan, dated 14 June 1983)	Rewrite and deletion of Exhibits C and D
Change 01	1 Sept 1983	Appendix I, requirement to include RTM added, page I-5 Appendix R. general rearrangement of outline	CSPO Request CSPO Request

APPENDIX I
COMPUTER PROGRAM CONFIGURATION ITEM (CPCI) SPECIFICATION (B5)

1. COMPUTER PROGRAM CONFIGURATION ITEM SPECIFICATION

The Computer Program Configuration Item (CPCI) Specification is applicable to the development of CPCIs and shall describe in operational, functional and mathematical language all of the requirements necessary to design and verify the required computer program in terms of performance criteria. The specification shall provide the logical, detailed descriptions of performance requirements of a computer program and the tests required to assure satisfactory development. The CPCI requirements are an allocated subset of requirements from the System Requirements Specification. The CPCI Specification must contain detail sufficient to provide reasonable assurances that a product can be generated that adequately delivers the necessary functional performance.

The following outline is to be used in preparation of the Computer Program Configuration Item Specification:

1.0 Scope

1.1 Identification

This paragraph shall contain the approved identification, nomenclature, and authorized abbreviation for the computer program.

1.2 Functional Relationship

A block diagram shall be prepared that shows the hierarchical relationship between this CPCI, the SRS from which its requirements have been allocated, all other CPCIs to which requirements are allocated by the SRS, and all Computer Program Components (CPCs) to which requirements of this CPCI have been allocated. Naming of CPCs and CPCIs shall be consistent in all inter-related documents.

2.0 Applicable Documents

Only documents referenced in Section 3, 4, 5 and the Appendices of the specification shall be listed in Section 2.

2.1 Government Documents

Federal and military specifications (as well as Government design activity specifications), standards, drawings, and other Government publications may be referenced in specifications.

2.2 Non-Government Documents

Reference may be made to non-Government specifications, standards, and publications promulgated by commercial organizations, technical societies and other non-governmental agencies when such documents are accepted by the using Governmental agency.

References shall be listed by document numbers and titles, and may include specific issue or revision where necessary to rigidly control the configuration or implementation of the item, material or process.

3.0 Requirements

This is the major section of the computer program development specification. It shall consist of a series of paragraphs that specify in detail the functional performance requirements of the computer program. This section shall define and specify all functional performance requirements, design constraints, and standards necessary to ensure proper development of the computer program. This paragraph shall contain a brief general discussion of the overall system within which the program will operate. It will show the relationships of each CPC subsystem within the computer program portion of the system. In particular, the role assigned to the computer program should be stressed to delineate the functions it must accomplish for the system. As the introductory segment of the specification, this paragraph shall:

a. Provide a brief general discussion of the overall CPCI and indicate references to other CPCI's performance specifications that will further clarify the performance requirements of the CPCI.

b. Provide a general description of any peripheral equipment with which the specified program may interface.

c. Provide a general description of any program that the specified program will interface with.

d. Provide a general description of the major functions of the computer program relative to the manner in which they will be subsequently treated.

3.1 Program Definition

This paragraph shall provide a detailed description of the major functions of the computer program. This paragraph shall:

a. Detail the requirements imposed on the computer program by each external interface and include the purpose of the external interfaces, their descriptions, any options and controls, and timing and accuracy limitations.

b. Provide timing and sequencing interface requirements imposed by other computer programs (including equipment, if applicable) or operational limitations.

c. Describe the major functions of the computer program including their interaction, sequencing and timing, and restart and recovery requirements. Block diagrams of the interfaces shall be provided to facilitate presentation of the material.

3.2 Detailed Functional Requirements

The subparagraphs under this paragraph shall contain the necessary detailed descriptions for each of the CPC's. A set of subparagraphs shall be prepared for each CPC.

3.2.K (Approved Identifier for the Kth CPC)

3.2.K.1 Description

This paragraph shall include a brief functional description of the Kth CPC.

3.2.K.2 Inputs

This paragraph shall specify, either directly or by reference to another part of this specification, all sources and types of input information associated with the Kth CPC. This shall include a description of the information, its source(s), and frequency of input information arrival when it has been determined that those frequencies impact processing.

3.2.K.3 Processing

This paragraph shall provide a description of all of the processing requirements of the Kth CPC. Requirements shall be allocated to the Kth CPC. Presentation of the descriptions shall include:

a. Purpose - Describe the exact intent of the operations(s). This involves a definition of the specific input and output parameters and the processing required.

b. Approach - Provide a textual description of each operation specified. The accompanying narrative shall identify accuracies required, sequence and timing of events, and relevant restrictions or limitations.

c. Sizing and Timing - Provide sizing and timing estimations pertinent to the processing requirements of the CPC's.

3.2.K.4 Outputs

This paragraph shall specify, either directly or by reference to another part of this specification, all destinations and types of output information associated with the Kth CPC as a result of the processing described in paragraph 3.2.K.3. This shall include a description of the information; its destination(s); frequency of output information, etc., where applicable.

3.2.n* Special Requirements

This paragraph shall contain detailed descriptions of special data processing requirements of instructions for special formats to accommodate testing, recording, simulation, necessary procedures, system growth requirements, recovery requirements, and special personnel requirements.

*n = The next sequential number following the number of the last CPC.

3.3 Adaptation

These paragraphs shall contain a description of the data requirements with respect to system environment, system parameters, and system capacities. Adaptation data is data that can be centrally modified as needed to define the scope of operational functions within prescribed limits. This data is divided into three classes and presented as follows.

3.3.1 Environment

Not Applicable.

3.3.2 System Parameters

This paragraph shall contain a description of constants required by one or more CPCs that may change from time to time incrementally within a specified range according to operational needs.

3.3.3 System Capacities

This paragraph shall contain a description of the capacity requirements for the computer program. The system capacities are directly related to computer storage capacities, interfacing subsystem timing rates, and interfacing equipment capacities.

4.0 Quality Assurance Provisions

This section shall consist of the following statement:

Detailed Quality Assurance Provisions are contained in the Preliminary Qualification Test Plans and Procedures for this CPCI. The PQT Test Plan

contains a detailed Test Requirements Verification Matrix which relates each functional requirement allocated to this CPCI to the applicable test. The PQT Plans and Procedures also specify any special test tool and capabilities required to qualify this CPCI.

Appendix

An appendix shall be added to each CPCI Specification that will incorporate a Requirements Traceability Matrix (RTM). This RTM shall be arranged with paragraph titles and all requirements subparagraphs of the System Requirements Specification (SRS) that are traceable to the CPCI in the left column, followed by a column with the CPCI paragraph number(s) to which each SRS requirement is traceable. A third column shall identify the CPC to which each CPCI requirements paragraph is traceable. The RTM shall be updated upon completion of CPC Specifications to include CPC paragraph number(s) to which each CPCI requirement paragraph is traceable.

APPENDIX P
DATA SPECIFICATION DOCUMENT

1. DATA SPECIFICATION DOCUMENT

The Data Specification Document describes each database, data file, and data item by file to include logical characteristics, physical characteristics, and identification of using software.

The following outline is to be used in preparation of the Data Specification Document:

1.0 Introduction

1.1 Purpose

State the purpose of this document.

1.2 Scope

State the scope of this document to include a discussion of its organization and contents.

1.3 References

List all references applicable to the content of this document.

2.0 Databases

For each development, test, training, and production database specify:

2.1-2.N (Database Name)

2.1.1 - 2.N.1 Identification

State the name and any aliases or other pertinent identifying information for the database.

2.1.2 - 2.N.2 Purpose

State the purpose of the database. If the database is to be experimental, test, training, or temporary, specify this and effective dates or periods of use.

2.1.3 - 2.N.3 Conventions

State all naming conventions for this database through the element level.

2.1.4 - 2.N.4 Physical Characteristics

2.1.4.1 - 2.N.4.1 Storage

State the requirements, constraints, and special conditions or storage for the database. Include:

1. Internal. Describe and illustrate the use of internal storage areas set aside for data, including indexing and working areas. Briefly state any equipment constraints and/or design considerations that affect the use of internal storage (i.e. Max Record Size).

2. Device. List, by device type, all peripheral storage required for the database. Briefly state any constraints imposed on storage by each device type. State the requirements for permanent and temporary data storage.

3. Offline. State the form, media, and storage requirements for all offline data storage.

2.1.4.2 - 2.N.4.2 Access

Describe the access method and specify the physical relationships of access (index, device, area). Describe all physical access security mechanisms.

2.1.5 - 2.N.5 Security

State how and by whom access to the database will be controlled to satisfy security restrictions.

2.1.6 - 2.N.6 Design Considerations

State the design considerations for the handling of the database, such as blocking factors. Emphasize the physical and logical relationships important to the efficient use of the database.

2.1.7 - 2.N.7 Files

2.1.7.1 - 2.N.7.N For each data file specify:

1. The source of the data, e.g., an operator, program, procedure, or organizational unit.
2. The storage medium for the file.
3. The relationship of the file to other data files, e.g., the database(s) to which it belongs, or linkages to other files.

4. The expected frequency and volume of processing. If the processing occurs in a random or "as occurred" manner, both the average freqency and volume and some measure of variance must be specified.
5. For each data element of each data file (i.e. Record Description), specify:
   a) A definition of the data element and its source.
   b) The use for the data element and its source.
   c) The position of the element within the file and the format (including units) of the element.
   d) Valid ranges and any critical values (one value from a range of values may have particular significance).
   e) The conversion factors of measured quantities that undergo analog or digital conversion processes.
   f) Frequency of data updating.
   g) A list of all programs and procedures which access the data element and what the access is, e.g., read only, write only, read/write.
   h) Record Size
6. For each data file, provide a record layout diagram (i.e. a snapshot).

3.0 Independent Files

For each stand alone file specify:

3.1-3.N (File Name)

3.1.1 - 3.N.1 Identification

State the name and any aliases or other pertinent identifying information for the file.

3.1.2 - 3.N.2 Purpose

State the purpose of the file. If the file is to be experimental, test, training, or temporary, specify this and effective dates or periods of use.

3.1.3 - 3.N.3 Conventions

State all naming conventions for this file through the element level.

3.1.4 - 3.N.4 Physical Characteristics

3.1.4.1 - 3.N.4.1 Storage

State the requirements, constraints, and special conditions or storage for the file. Include:

1. Internal. Describe and illustrate the use of internal storage areas set aside for data, including indexing and working areas. Briefly state any equipment constraints and/or design considerations that affect the use of internal storage (i.e. Max Record Size).

2. Device. List, by device type, all peripheral storage required for the file. Briefly state any constraints imposed on storage by each device type. State the requirements for permanent and temporary data storage.

3. Offline. State the form, media, and storage requirements for all offline data storage.

3.1.4.2 - 3.N.4.2 Access

Describe the access method and specify the physical relationships of access (index, device, area). Describe all physical access security mechanisms.

3.1.5 - 3.N.5 Security

State how and by whom access to the file will be controlled to satisfy security restrictions.

3.1.6 - 3.N.6 Design Considerations

State the design considerations for the handling of the file, such as blocking factors. Emphasize the physical and logical relationships important to the efficient use of the file.

3.1.7 - 3.N.7 Data Files

For each data file specify:

1. The source of the data, e.g., an operator, program, procedure, or organizational unit.
2. The storage medium for the file.
3. The relationship of the file to other data files, e.g., the database(s) to which it belongs, or linkages to other files.
4. The expected frequency and volume of processing. If the processing occurs in a random or "as occurred" manner, both the average freqency and volume and some measure of variance must be specified.

5. For each data element of each data file (i.e. Record Description), specify:
   a) A definition of the data element and its source.
   b) The use for the data element and its source.
   c) The position of the element within the file and the format (including units) of the element.
   d) Valid ranges and any critical values (one value from a range of values may have particular significance).
   e) The conversion factors of measured quantities that undergo analog or digital conversion processes.
   f) Frequency of data updating.
   g) A list of all programs and procedures which access the data element and what the access is, e.g., read only, write only, read/write.
   h) Record Size

6. For each data file, provide a record layout diagram (i.e. a snapshot).